

SEQUENCE LISTING

O I P E **JC18**

AUG 28 2002

<110> Rastelli, Luca
Gould-Rothberg, Bonnie
Murphey, Ryan

<120> Method of Detecting and Treating Tuberous Sclerosis Complex Associated Disorders

<130> 21402-042

<140> 10/016,253
<141> 2001-12-10

<150> 60/254,268
<151> 2000-12-08

<160> 25

<170> PatentIn Ver. 2.1

<210> 1
<211> 2520
<212> DNA
<213> Homo sapiens

<400> 1
ggctctggct cgggctcggg ctggggctgg ggcttgggct ccagctcggg ccctgcaccc 60
gtgactcggc ggcgttgctc ctccgctgccc ccatggccccc gtcccgctg cagctcgcc 120
tcccgccgc ctactccggc ttcaagctcggt tagccggctt ctccatcttc ttctgtctgg 180
cggtggctca ccgacaacccg gggactcgccg cgatgggggg tctcgccagg tgcctggcac 240
tgtgggtctt ggtgactcac gtgtatgtaca tgcaggattt ctggaggacc tggtctcagag 300
ggctgcgcgg cttcttcttc gtgggtgtctc tcttctcgcc agtctccgtt tccgccttct 360
gcacccctcctt ggcattggcc atcaccacccg atcagagtct caaagacccg aacagctact 420
acctctccctg tgtctggagc ttcatccct tcaagtgggc ctccctactt agcctctacg 480
cccacccgcta ccgggctgac tttgcggaca tcagcatctt tagtgatttc taacccaggg 540
aatgaggtaa ccacagcctg ggggcctcg ggatctggac tcagctcccg agtcagcaag 600
ggagctcacc ccaacccctg gggaaactcca gaaccatggc agagtatatg gggccgttca 660
gtttctcaga aatctgtctg gtcccctttt gggaaagata tagagctgtt aaagggatac 720
tgccaatctg cccaatctgc ccgttagccc agctagaggg cagcttagac cttccaaat 780
agatctattt tcttagccct ctgagggtac tctgttaagta gggccacgac aatgaattca 840
atgggttagga ttgaaactat ggctagtgtac aggggctggg acaggcttcc ttgtctaccc 900
agacttcattt gaagctgtgt gtgggggagg catcaaaagggt ctggtaaga gaggaatctt 960
tagtacagat ctccatcccc ttgttcccac cctgttaccc tgaagtgtcg ggtagccaaa 1020
ctcaccggc ctttaggaaat tgacaattgg ctccctccct aagcagcaca gttggacaga 1080
atccacgc cgtccgtctt accttcccat ccagagttt tttccatga gggtgcttagc 1140
gccagccaaac cattccatgt tgctgcataat gcacacatga ccacacac cagagcagga 1200
ctcctcgat gaggctagac ttgaggacca cagaaacac accccctgcac tttagaaggc 1260
tttgggatcg gggcaaccc tggggggca agtggggact ctccatctgt actgagtctc 1320
caacccctgccc cctcaactgca caagaccacc ctgaccgtga ggacccctc cctgcaccc 1380
atccctaactc tgaccttca ccttctctt ctccctgaagg aactcttctg agtggacatg 1440
ggcccaaggc cttacctaag cggagaggg aggcaggggc tgctactctt ctctgttaacc 1500
ttctctgtat ggttgtact ttgcacgtct actcttccac ttggggactg ccccccagctc 1560
tctgccttac ctgtgttatg ggcacttaag cagaatataca gggccattt taaccagcaa 1620
aaaaaaaaaa aaataggggg gtgggcgtt ttgagagggg acaagagtgg gcaagatggg 1680
ggctctagct gtctgtatcat ctcccttaagt ttggggctac tagacggtat tcctcatctc 1740
tggccccccta tggagacca ccagctgaga tctcccttgc tctccctactt ctgtccac 1800

cagggttagg atgcccacag actcaacatc cctgcagatt ccatctcccc accctaagcc 1860
aaggtagatg gaaaaggaa tctttcttt tctacccag ccagactact tggggctcca 1920
agttgaccag gatgtgtgga ttcagaagca gaaaggcagg agctagcacc tctctcacgc 1980
tgggtacact tgtcctggcc tgtgtttgcc tcaccctggc ctttacagtg taaaaacacc 2040
atgggacttt agagcaggga aggataagga acagtgtcac ttctagagcc ttctgctgg 2100
agacgctct actgatagag gaggtaaaga ctactgaccc cccggctagg cctggcttaa 2160
gccaggcgtg gcctcggtca caacctttg cgggtgttca gcaacctgaa cctgagatct 2220
tattcccgaa tcccacaggg cccaatgtgc aggctcagc ctggggccat ctccctttc 2280
acctgggttg gtgagcatgt atttggagtg gttcttccct gcatgttata gccaaggaag 2340
gacaaggac tagagggct tagtttagtgc cagacttgc ccctttcccc agcccatcac 2400
aggatgctgg gtgcacaccc actccactga cgatgtccca ccaacatcca ggaggcgttc 2460
tcccaaggac tttaaagcaa ataaaacata tattgttcag aaaaaaaaaa aaaaaaaaaa 2520

<210> 2
<211> 1860
<212> DNA
<213> Homo sapiens

<400> 2
aagcgtgacc ctaagtctag cctggagcca gggctagagt ggtcatttct ttgtgggtg 60
ctgccaggaa gggggccagac ccacaggcta ctcaaaggcc ctagagaccc ctccccaggc 120
aggtgctgcc ccaggaggag catgtcctgg ggtccgggaa ctgaagtcca tggggctca 180
gccccccaca cccagaacac cgcttgctca aggtgctttt ggcttagtg tggatgttt 240
gctgtgcttc tgggctgaat tagttccaa atcaggaccc ggagcctcta ccctggccca 300
gccagccagt gtgagctctg gtctgtgaga tggcagctg cggggccagt gggcagcatg 360
tgggtggagg ggcaaggctg ggacccagtg gtttacagac ctgtggccct cctggagcaa 420
cctggcagct acggatccca gaacccctg ggcttcaagct ccccaagagg ggagaggctc 480
cacgttgctt tccttccca aaatccctt ctttgtctg gtgtctggg cccaaaggag 540
tgggcagagg actcggaggg cctaggggtc ccagtcgggg catctgttagc tcctaagcac 600
gacaagcatc agtgcagggg accctggct tgactccaa tggcctggcg ccaggaacct 660
ccagggccag agcagccca gtcagccag cctggccact atgggtatgt tcctggccta 720
aggtccggag ggaggtttgg ggtatccctg cctgggtgcc tgggtgtgcc ctggggccctc 780
tcagaagcac aaatgtgcc ccctggccgt gagcaggcca caaggtaat gtatatacg 840
tgagaggccg gcactgccc gacgtggctg tgaacttgc ctgtctcggg agtccctgacc 900
ttctgtgcgt gagtgccttc atctgtgacg tttcaactcac cgaggctgaa gaaaggaagc 960
aggggaaatg aaagcaggaa tttctcgccc tgacccctgc ggaggagacg gtcctacca 1020
ctgcgggtgg cttcatttcg ttttcctgtat ttctgggtg ccacttaccc actcaatccc 1080
agtggccac cccacatcc ccagggagtg agcagtccag tgccagctgc ctgtgattgg 1140
tccccagttcc ctattacca aggggaccc acagctctgg tgggttaacaa ggagggtctaa 1200
gccacccaaac cagagccca tccctggccg agcaggagg agggatctgg ctgagaaaaac 1260
tgataggact ggaggccccc accccaaacca acactctctg gtttatgtga gtacgagaag 1320
atccccggct ggagcatcc tcaagccctt ctccctgtgc ccaccccgcc cccccccccc 1380
cccatatcac tatgcaattc ttgacccctg ctccaaagct tgccctaccc ggtcccagct 1440
ctgtccggcc cagaagggtgg ctagctgtg ggcacaggt gaccagggtc tctttgttt 1500
tcatcacagc ggtgggtgtc cgccacccctc ctcccatatg tgatttgtg agattgcctc 1560
ccagttacgg tccctctgcc tgcattctgc cccagtgac tatgtcatct gaatcgagcc 1620
agccccaagt tcccctccag cctctgttagg gccatggctg tgggttactg ttgctgtgct 1680
ttcattttt aaactgggtt tggggtttga ttttatttc tggggaaac ttatttttc 1740
ttggcaata actaaagttc ttgtccatgt aatttctgtg gtctctattc agttgggtt 1800
tcattttta aaataaacaa tttaaagaaa caaaaaaaaaa aaaaaaaaaa aaaaaaaaaaagc 1860

<210> 3
<211> 750
<212> DNA
<213> Homo sapiens

<400> 3
cttgtttatc ctactcggtt agtttctac taatttcaag actagtgtta acattctaa 60
gtatgttatct tagggtagat tcaagggttt agatgactaa cagttcagat tttctgatca 120
attttttaaa cactagagaa taaaagtgtt ctagagaata aaagcagctt catagttat 180
tctccaccaat tggccctttg ctagctgctg gctttaggtt cacataggat aatatgtgtc 240
cacgtttcta cttggaactg gtaaaagggtt tcactggctg gaaaatggta tctctctt 300
gtatacaaga tggtccattt gacactggta tttatgttca agttctttgtt ttgtttgatt 360
gagctctctt gaacctttagt catcttttag ttttgcattt gaatggaaatg gaactgggtt 420
gaagtttaaaag gaaatattca ttttgaactt tggtcattttt gaaagggaaat gcaagtttca 480
aaatgaaaaaa taaaatgaaa aaggaaataa attattgtcc cagatggtca cttgagttt 540
aaaaaaatggc tgcacacagt aaaactgcta aaaacaaaaaa cttacccat tattggttt 600
catctttttt cagctactaa ttttatacca aaatgttaaa tattttatattt gttttagttt 660
caatcttgc tggaaaaaaa taatttagt gtcataaaat gccatgctt ccaataaaga 720
agttaaaaaaa atcatcagta atgtgaattt 750

<210> 4
<211> 281
<212> DNA
<213> Homo sapiens

<400> 4
ggcccccctcc gtctcagagc aactataccctt tctacctcggtt aaggagcagc agagagagaa 60
gccacaggcc accaggaggc ccagcaaaagc caccaactat ggaagttctt cagccaccc 120
acctcccccaccctt ctctggggagg tcagcacaag agttgtgggc acaagccgtt tccgggacaa 180
ccggacagac aaacgggaac atggccatca ggacccaaat gtggtccag gtcctcacaa 240
gccagtaaaag gggaaagctgc ccaaaaaagaa ggacagaattt c 281

<210> 5
<211> 1568
<212> DNA
<213> Homo sapiens

<400> 5
cgcgccgggag ccaagatgcc tcgcggggac tcggagcagg tgctactgtt cgcgcgtt 60
tcctatctt ggctcaagtt ctctctcatc atctactcca ccgtgttctg gctgattttggg 120
ggcctggccc tgcgtgtttt gatctacgca gaggcagagc ggcagaaata caaaaccctt 180
gaagagtggcc ttccctggccc ccgcacatcat cctcatcctt ctgggggtgg tcatgttcat 240
cgtctccctt atcgggggtgc tggcttccctt ccgggacaac ctgtgcctt tgcagtcgtt 300
tatgtatatac ctggggatctt gcctggtcat ggagtttattt ggtgggtctg tattttgggg 360
ccgcccggaaac cagactattt actttctgaa cgacaacatc cggagaggaa tcgagaattt 420
ctacgatgtatctt ctggacttca agaacatcat ggactttttt cagaagaagt tcaagtgctg 480
tggccggggag gactacagag actggagcaaa aaccaggatc catgactgca ggcggccgg 540
ccccctggctt gacgggggtt cctacacccat ctgcacatcggg aacacgttgc tgcacatc 600
atgtgtggctt acaaaaacat cggacaaggag cgcctgaatg cacagaacat cattcacgtt 660
cgccggctgca ccaacggccgt gttgatatgg ttcatggaca actataccat catggccggc 720
cttttactgg gcatcttgc tccctcgtt tttttgttgc tgctgaccctt actgtacatc 780
acccctgtgg aggacattat cttggagcac tctgtcacgg atggatttgc gggacctgg 840
gccaagtcca gaacggacac agcaggcaact ggatgtgttcc tgcgttatcc cgattagctt 900
tgctgatttgc gctatccctgg cccggcacag cagctccctt ccggactgtt ctgcaaaatgt 960
catctaagac tacacaagctt ggacaggacc agtgcagttt cctctccca cccacggcgc 1020
tgacccaaagc ccagggtgtt gtttgc tttttgttgc tttttgttgc tttttgttgc 1080
gaaagctgaa ccctgtggga tcccggaac agggatagcc cagctccgtt tctgagtcctt 1140
ggagaaggca gctcagggtt ccgtgtggc tctttttttt tctggcagtg ctttggccag 1200
tggtcattat gccccttcaa gggcagttt gcaatgttcaatggg caagaaggaa 1260

gtgtatctgt tctataggga agtcctgggt gcagccctgg tacactactc tagatgtgac 1320
gttggactgt gtctcaaatt cccaggtgcc ttgagtcctc tgtaaggctc ctgctttgcc 1380
caccatattt ctacatatgt tttttttctt tttttttt aataaccgtg tttgtatac 1440
aattaacaag agtttctggc tattcaaaac tagccacccc tgaccgagtc cactcacccc 1500
tccccgttag ttcatttaatt gaacaataaa tatgtgtttt ggggggtggc cttaaaaaaa 1560
aaaaaaaaa 1568

<210> 6
<211> 300
<212> DNA
<213> Homo sapiens

<400> 6
gccggcttctt tggaggac tccatccatg accagttgt gcagaaagtgc tggaggaag 60
taggaaagat gaaaatcgcc gacccctgg acaggatac caaccatggc cccgagaacc 120
atgaggccca cctgaggaag ctgggtggagt attgccaacg tgggtgtgaag gaaggggcca 180
caactggctcg tggtgggaac caagtcccaa ggcaggctt ctttttcag ccaaccgtt 240
tcacagacgt ggaggaccac atgtacatcg ctaaggagga gtccttcggg cccatcatga 300

<210> 7
<211> 965
<212> DNA
<213> Homo sapiens

<400> 7
ccccacagtc ctgcccactc accaggtcca gggagagca ggcgggtgact cgatgacaag 60
tgccttagt tgaagagcac atctactca ttcctctctc agtacctgt acattcctct 120
gtgctaacc ccccttgggg aggaccacc ctctggaggc tggacttggg gcaacaggc 180
actcacctgt cactgccaag ggcgggcagg ccattttcc gagccatgg gagccgggac 240
caactaaagact gctgtggga agaagttggg tgctgggctg atggcttgc tttctttgg 300
tcttcgcttg taatgtggct ggccatgtt ggttttatgt ttaatgtgt gcttataata 360
agaaaagagcc cccccaagct gtacatttat aaaaagtgtat catabactgt atatagaaaa 420
atctagaagc acatataaatc gcagcaggtt gtattccact gtaccattc atgaaggtag 480
gttttattac aggactcgca ccaggtactt acagacgcgc cctctctt ttgccttagag 540
aaacagtca tgcattcccg cacagtccct cagacccctt tacccttcc cctgttaggaa 600
attctcctgt gaccctctg ccgtcctccc ttacttccta aataaatgtt acggagtca 660
tgcaaaaaaa aaaaataaaa tgacatttat tgggggttat aattttctcc taaaaacacaa 720
accagtggta tggcataacc caccattgtt tcccccactt ccatgaccgt cacaacacatc 780
tgggatgagc accttgttag caggaaaagt tatgtttaa gaaatttctg gccaggcgtg 840
gtggcataaca ccttaatcc cagcactcgg gaggcagagg caggtggatt tctgagttcg 900
aggccagct ggtctacaaa gtgagttcca ggacagccag ggctacacag agaaaccctg 960
tctcg 965

<210> 8
<211> 408
<212> DNA
<213> Homo sapiens

<400> 8
gccgggtctg aaaaggacta ggctggcatt ggtgacaccg agcttgggt cagccacaca 60
ggtagatgtt ccatagtgtt cctcagtgac attggtcacc gtcaggagg actggccctc 120
agtgcctta atctcaaggc catttgcact gtttacccctg gtgtcatccc ggtaccactc 180
aaagtcaaggc gcaggcaccg ctgaggctt acatggagg gaagctgtc gtccctgtgg 240
ggcttcgttg ctcttcgact ccgtgatagt ggggtggatag ttcacagtga ctttgacttg 300

tttgacatcc gccgaggaga cctcggtggc agcctgcac tcataattgc ctgactgttc 360
cctggtgatg cctaggatct ccagatattc ttcttctcct tcaaattt 408

<210> 9
<211> 355
<212> DNA
<213> Homo sapiens

<400> 9
gtgcaccaga tgttctacga ggccctagat aagtacggga acctcagtgc tctgggcttc 60
aagcgcaagg acaagtggga gcgtatctt tactgccagt actacctgat tgacgc当地 120
gtagccaaag gcttcttgc gctcggccta gagcgtgccc acagcgtggc gatccttggc 180
ttcaactctc cagaatgggtt cttctctgca gtgggcacag tgttcgcagg ggcattgtc 240
actggcatct acaccaccag ctccccggag gcctgccagt acatctctca tgactgccga 300
gccaatgtca tcgtgggttga cacacagaag cagctggaaa agatcctgaa gatct 355

<210> 10
<211> 918
<212> DNA
<213> Homo sapiens

<400> 10
cgatcatct gggtcgcgac cttgaggccg ggaatcgagt ttccaaacgt gcgccccct 60
tcgccccgtc tgctcccccc tttctctcca tggcagcggc ccggaaacctg cgaccgcgt 120
catattcggaa ggcttcatct ccatggtcgg cgccgccttc tatcccattt acttccggcc 180
ccttatgggg ctggaggaat accagaagga gcaggctgtt aatcgagctg gtattgtcca 240
gaaagatgtg caaccggccag gttgaaagtg tggctgtatc catttgcag gaaatgaggc 300
tgtcagcaag tctgtatggg aaagtggacg tctttatctt gtgcactccg cagtggggac 360
aatagatgcc tcactgtggc agcatggcat ggagagggaa ctctcatgtc gctagccaga 420
ccccttgcgaa tagagactgt gtgcaaaagac agtgcctccc ttaactccct ggagaacctg 480
aacagatgcc accatttagga agtgccttc ggctccattt actttgcagg agcagagcca 540
gcctgc当地 ctgtttgtgg aagatctgtc gctcctgc当地 tctttatcac ttccaagctg 600
tgatgtgaac acaagcaacc tggggctca agtccgtgg ctgctctgac acctttgaa 660
taagcgattt cagtgcaaat ggccttgcca agtgcctcg cagggtctt ggaggatgtt 720
tcagttgata aaactgtttt aagacaggat ccttggact gtttaagaat atacactgct 780
cagcttaacc atttcattga aagtcaactgt gtgtggaaat gaataggag cgagtcacac 840
tagactatac cacacacagt agattccgtc gtgaggctgc aggtattttt atggtttctc 900
ttaaaaaaaaaaaaaaa 918

<210> 11
<211> 1113
<212> DNA
<213> Homo sapiens

<400> 11
ggagacccaa gatctgaacc agccagccag gtgctgcaca gcctcaactt tggagcaga 60
ggccctgtgg ggttaacttg ggtctgc当地 aaacagtgtt tcccgcaagg aaaatcttgg 120
gtcaagatgg aggctgtctt ggaacactga gtgttcaag ggagaaagag tggaaaccgt 180
ggccctttgg ggccagaccc tgcaggagct tgctcgc当地 ttgaggagga ggcactgctc 240
ttcaggtgcc ctggagggcc ttttagtgcc atccccacag cagatggaaat gtggcgc当地 300
tgtcatggg tggcttgc当地 ctggtagaaat gctgttctt accctgtgc agcctttcac 360
actcacacac accccaaacac acacttctcg gccctgtatg ttcaggtgag agacaaggga 420
agatggctca tcattttcag ccatgtcccc aaagtggccct ctcttcatg ctctgtggc 480
tttggcctgc agctgttcca gagtttaggaa tggatgtttt gtctgtgagg tacccttgc 540

cctagtggat cagttacagg cctatgtcca gcaccagagt ccctgttccg atatcatcac 600
agatagccctg ttgtttcca cagaggagcc agatgttaagt cagacaccc tcagcctacca 660
gtctcctgcc atcagcttg gctctaattgg gctcttgggtg gcctccctgg tttgttcactg 720
gtacaggaca gcaagtggct cagaaaggct gcttgccttctt gagctcagcc acttattcac 780
atgggttcaga gcagatctt gtaactcttca gactcaagta tggtgatctg tttgacagta 840
gagggtctggc ctacccctca ccctcatctt ccagcaccc taacaagaac cacactcatg 900
cctctgggtt cagttttctt gtctgccttc cctggcctac ctagatattt atttcttgg 960
ttttatgaat agttaagccc tgcccatctg tgccttcag acgaaacac agaaacctag 1020
gctgtgccat ttgtttctc acagttgtt aatgaaacct caaggaatat gggaaataaag 1080
cctagaccct ggagtggta aagagtaaaa aaa 1113

<210> 12
<211> 594
<212> DNA
<213> Homo sapiens

<400> 12
agatctctgt ttcctctttc ttctctcctc tatgtcttc ttttagcctac cctcagggtg 60
atctctaaacc caaactaatac ccgaggaaca gacacttggc tcagctccac ctactacctg 120
gctcacctgt tcccagaatc tccatagaag agggcacttt ctttctcaag ttaccctaaac 180
attctctgca ggataaaaatc atgagtccag cctgtctgtg gaactggggc ctgtctgcag 240
cttccctgca gaagtgtcca ttcaacttgg gtatcttcc cgaccaagat acttaggtgt 300
tttggccagc accagtattt ctatgaattt ctgtatcttgg gttgaataga caggaatcaa 360
gaccttaggtt tttcaactgtg tgaacctgag catgtggcct gacctgctgg aagctcctct 420
gctcttgggtt gaagcaggaa tgctgtcagg cacacagcac aacacaccag tggggagaa 480
cgctaattccc aacacacaaa ttccacagaa atggcactat cctcggtct cctgcctaaac 540
catggacaaa gctgagaata aacagtgtt tactttgaaa aaaaaaaaaaaa aaaa 594

<210> 13
<211> 713
<212> DNA
<213> Homo sapiens

<400> 13
caattgtttt ttcttaaccat ctttagggaaac aatacattgc aataattgtt aatagtgcac 60
tcactgttaat aaactttaga gactttttt aatgtaaaag ttgttggta ccttgggttcc 120
tgtaaccttc actctgtcac acgagttggc tcataagggtt tttttgtcta tcagaaataa 180
aaaaaaacaca agtgaagaaa atgttggcat gaagtcatcc atctgcataat aaaaacctaa 240
aagactacgg gtcactcatg ttatcaat aatttataat cctgttcatgt gtacaaaatt 300
gtgggtttt tactcacccaa aaagactaaa acaccgttt ttcttacagt atctatctac 360
agagcttatt ctcccttatt atttggggaaa ctctgagact ccatattgcga gaagtcaagg 420
aataggccat ataagaaaat gtagcttgg tttattttt ctgcataattt atttcttagat 480
cttgggctca ttgttaaca gaataagggtt tcaaaggtaa agtccttgag tctgggaatg 540
agccatcggtt cccaaaccaa cacaccctgt gtggaaattt tacttgactc tttttgtct 600
catagaattc agtgcctt ggcattccc cctcattccct atactaaatt ctgtgaagac 660
actggtaaca gtttggta gactacagtt gaaaaaactc aatccttatt tct 713

<210> 14
<211> 306
<212> DNA
<213> Homo sapiens

<400> 14
ggatccctcc accctatgac aagaaaaagc ggatgggtt ccctgctgct ctcaagggtt 60

gttcgcgctg aagcctacca gaaagttgc ttacctgggg cgtctggcgc atgaggtcg 120
gttggaaagtac caggcagtga cagccactct ggaggagaaa cggaaggaaa aggccaagat 180
gcactatcg aagaagaagc agatctttag gttacggaaa caggcagaaa agaatgtgga 240
gaagaaaaatc tgcaagttca cagaggtcct caagaccaac ggactcctgg tgtgaaccca 300
ataaag 306

<210> 15
<211> 66
<212> DNA
<213> Homo sapiens

<400> 15
gaattcgaat cacgctcacc agccgcaacg tgaagtcgct ggagaaggaa tgtgcggact 60
tgatca 66

<210> 16
<211> 1613
<212> DNA
<213> Homo sapiens

<400> 16
ccagctcaga ggttcttaggg gcagccggcg cgcttctcta gttgcagctt gggcggctcc 60
tgtgggtggc ggctaggggc gagccggat gggctataga cgcgcgacgt gatcagttcg 120
cacgcggacc cacgcctccc atcgctctgc ctcagagcc tattctgtgg gtgcaggcac 180
gcaccggacg cagacccggc cggagcatgc ggggtgcgggt gtggcggcc cgaggcgcg 240
cggggcagca gtggcctcg tccccggcc ctggggccggg tccggccccc ccgcacccgc 300
tgctgttgct gctactactg ctgctggcg gcgcgagcgc tcagactcc agcgcacctgt 360
gcagctggaa ggggagtgaa ctcacccgag aggcacgcag caaggaggtg gaggcagggt 420
acctgcgtcg ctccgcagggc tctgtggagt ggatgtaccc aactggggcg ctcattgtta 480
actacggggcc caacaccttc tcacctgccc agaacttgac tgtgtgcattc aagccttca 540
ggcactcctc tggagccat atttatttgg aaaaaactgg agaactaaga ctgttgggtgc 600
gggacatcag aggtgagcct ggccaagtgc agtgcattcag cctggagcag ggaggcttat 660
ttgtggagggc gacaccccaa caggacatca gcagaaggac cacaggcttc cagtatgagc 720
tgatgagttgg gcagagggga ctggacctgc acgtgtgtc tgccccctgt cgcccttgca 780
gtgacactga ggtcctcctt gccatctgtt ccagtgtactt tggtgtccga ggcttcattt 840
aggacgtcac acatgtacca gaacagcaag tgcgtgtcat ctacctgcgg gtgaacaggc 900
ttcacaggca gaagagcagg gtcttccagc cagctcctga ggacagtggc cactggctgg 960
gccatgtcac aacactgtcg cagtgtggag tacgaccagg gcatggggaa ttccctttca 1020
ctggacatgt gcactttggg gaggcacaac ttggatgtgc cccacgttt agtgactttc 1080
aaaggatgtt cagggaaagca gaagaaatgg gcataaaaccc ctgtgaatc aatatggagt 1140
gacttgcagg gtgacacagt actgttgcc ttcaagatgag ccatgttttggctcagt 1200
cgctctatca tattctgtata gagattgcag actgggtggca tggcccgac ctgggtgttag 1260
aactggaaag gtacatgtcg ttctgacccc ttaggtccca gccaaggatg ccctgacccca 1320
ttggaaactgc tgtaaaatgc aaactaagtt attatatttt ttttggaaaa gaaaaaaaaa 1380
aaaaaaaaaaag aaaactccgc gcacaggggg ggtacgtccc aattcgccaa aaacagatgc 1440
tagaaccctt ggcggcccccc ccaccccccac gggagacact agctaaccaa ttaatgtttt 1500
gaaaatccct tctgcacccgg tagtacggaa ggcccacgat gccttcaaag ctgcctggac 1560
ggaatgcaaa tgaacgctaa ttcttaatcc ggtaattgtt aaccgcattct aca 1613

<210> 17
<211> 2245
<212> DNA
<213> Homo sapiens

<400> 17

acgtgaccgt gagaccctag gagcaatggc gggcgccgt gctggcttcc tggatgttgct 60
 ggggctcgcg tcgcaggggc ccgcgcgggc atgtccggg aagatgaagg tggatggagga 120
 gcctaacaca ttccggctga ataaccctt cttgccccag gcaagccgcc ttccagcccaa 180
 gagagagcct tcagctgtat ccgggcccct gcatcttcc agacttgctg gcaagtgttt 240
 tagccttagt gaggccacgt acaagtatga attctgcctt ttccacaacg tcacccagca 300
 cgagcagacc ttccgctgga atgcctacag cgggatcctt ggcacatcgatc atgagtgaaa 360
 aatcatcaac aataccttca agggcatgtg gatgactgtat ggggactcct gccactcccg 420
 gagccggcag agcaagggtgg agctcacccg tggaaagatc aaccgactgg cccacgtgtc 480
 tgagccaaacg acctgtgtct atgcatttgcattc gagacc cctcttgcctt gccatcccc 540
 ctctttgtta gtgtatccaa ctctgtcaga ggcctgcag cagcgctggg accaggtggaa 600
 acaggacctg gcagatgaac tgatcacacc acagggttat gagaagttgc taagggtact 660
 ttttcgagga tgccggctac ttaaagggtcc caggagaaac ccattccacc cagctggcag 720
 gaggttccaa gggcctaggg cttgagactc tggacaactg tagaaaggca catgcagac 780
 tgtcacagga ggtacaaaaga ctgacgagtc tgctgcaaca gcatggaatc ccccacactc 840
 agcccacaga aaccactcac tctcagcacc tgggtcagca gctccccata ggtcaatcg 900
 cagcagagca tctgcccgt gaccaggac tacgtggaa catcctgtga gcaagggtggc 960
 cacgaagaat agaaatatcc tgagcttgc tgcccttcc acagagtga caaaactgg 1020
 gtgggtgaga cacgcttct tttggcatat tctagatcag acagtgtcac tgacaaacaa 1080
 gagggacctg ctggccagcc tttgttgc ccaaagatcc agacaaaata aagattcaaa 1140
 gtttaatta attccataact gataaaaaat aactccatga cttctgtaaa ccattgcata 1200
 aatgttattt taaaaaaaaat taaacaaatg ttaacaactt taacaattca ctaaagtaaa 1260
 tggttatgttta ttataaataat gaccatctgg gttaagaaga ttccattcac ataacattct 1320
 caactaattt ctgaagaaca aatgaacaca aaggcttcca taagttatc cacatgcgc 1380
 tccatactgg gggaaaggct gccaaccagg tacacaagac tctgacacta ccatatactg 1440
 ttactattca acactagaga gtttagacgac aacaggcatc aggacagtgg tgggtcccg 1500
 ttccttagacc catggccca cctccattac ccacacacgg gccttaaggc tctctctccc 1560
 cttcttggcc cttcccaccc agggtagatc ctagaaggct cagctctaa gaggtctgg 1620
 atggatggga aaagtggccc cttctggac gttctttgtt cctccctgc acacctgtcc 1680
 tcagagctca gcctgattcc agaagagcag atgctcagga aagctccccg catggatgg 1740
 gaccagggt gcactaccgc ctgcctcccc agccatcaca acagccccag aactgcccc 1800
 ccccaaggctg gaatgtcagc ccaggaggag ttaaccaggag tagttacat acaatctaaa 1860
 gcttaatgttactgtatatac acttgaattt gtcctgatga gctatcaatc acaaacactg 1920
 tcctgttacc acagagatca aaggcctgac atggaaaca gttcataat atgaataaaa 1980
 ataaacaatc ttaaaccatg gtaacagtag caccatcatac acatgatcta ggtactgac 2040
 taataaatac ttatcactat aattaaaaac aaaagtcaact gaaatcaggt caatagttac 2100
 cttatatagt agtgggcttag ctgtggatg ttgaagatcc atttccttta aatgatata 2160
 ggtctttct atcagttgtt cttatattaa aaaatgttt taaatttcctt actatattaa 2220
 atacattcta atttggtcac tgata 2245

<210> 18
 <211> 171
 <212> DNA
 <213> Homo sapiens

<400> 18

actagtccacc aaaatgcttg gttctaaatg gtagagaagg agacacccat gatataatac 60
 aggtcaactt tttgacgtgg ggtgggggtg ggggtggggg tgggggtgaa catcacggc 120
 gcaaataaagc agggttttag ctgtccatc attgttagact taataaaaattt y 171

<210> 19
 <211> 491
 <212> DNA
 <213> Homo sapiens

<400> 19
cagttgcaga agggagaaaat cacggcagaa tcatcgagaa acctgaaaaaa tgagacctag 60
aatgaagtat tccaaactcca agattcccc ggcaaagttc agcagcaccg caggcgaagc 120
cctggtcccg ccttgcaaaa taagaagatc ccaacataag accaaagaat tctgccatgt 180
ctactgcacg agactccgtt ctggcctcac cataagaaaag gagactagtt attttaggaa 240
agaacccacg aaaagatatt cactaaaatc ggttaccaag catgaagaga acttctctgc 300
ctatccacgg gattcttagga agagatcctt gcttgcagt atccaagcat ttgctgcgtc 360
tgttgcacaca ttgagcatcc aaggaacttc acttttaaca cagtctcctg cctccctgag 420
tacataacaat gaccaatctg ttagtttgt tttggagaat ggatgttatg tcatcaatgt 480
tgacgactct g 491

<210> 20
<211> 659
<212> DNA
<213> Homo sapiens

<400> 20
atttggaaatt ttaagttta tcaatgcctc tggaaagctta gaactgtaca cgtgtgatgt 60
cagtcacata gaggaatgtg cccggactgc ctcatgcctt tattttcctt ggtaaatttg 120
aagatagaat gtctgactag cgcaagtacc agaaaacaat gtggtagtca acatctcagg 180
ccatatttttta agatccctgtt gagcactatt catttcagggt tgcaagatggta gtatttttga 240
aacatcatta ctatgttagat gcttggatag gagtgagggg gagctagcag attcctgtg 300
ccatatttttca agctgattgtt tgtagatg tagtttttatt ttgtaaaatc cactgaaaga 360
atatggccac acccttgcct acttgatagc atcaatacag aagccaagaa ggaccactaa 420
gtaaacccctt cttcccagggg agagcagcta gcttggaaatc tctcgatgatc aatcgatgcg 480
tctgacctttt gggatcctca ccatatgggc aaacaatggg ctttgcagga tgagagacac 540
ccacttaaac ctctgacgtt ctcgaatgtt tcacatcttc cgtcatcaac cagtcatgg 600
aaacaatcaa caaactctgc cacgtgaaat atttttcag acttttctaa cccaaagctt 659

<210> 21
<211> 341
<212> DNA
<213> Homo sapiens

<400> 21
raattcaaaac aaagctttgg acaaggccccgtttaaaaagc aaagatgtca agttggcaga 60
gactcatcag caggaatgct gccagaagtt tgaacagctt tctgaatctg caaaagaaga 120
gctgataaac ttcaaacggg agagagtggc agcatttcga aagaacctaa tcgaaatgtc 180
tgaactggaa ataaagcatg ccagaaacaa cgtctccctg ttgcagagct gcatcgactt 240
attcaagaac aactgacctg tctactctga aggacaccaa tgtgaaagcc agcatcactt 300
gcacttaaat cattactgca aaagaaatag ctttgactag t 341

<210> 22
<211> 53
<212> DNA
<213> Homo sapiens

<400> 22
ggatcctgca aggctttggc cagtcagaa gcggcaaccc ctacacacccagg 53

<210> 23
<211> 21
<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR primer
sequence

<400> 23

tcaatggAAC ctTCAGCCTT a

21

<210> 24

<211> 25

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR primer
sequence

<400> 24

ctcactgtGA aAGCTGcAGC accAG

25

<210> 25

<211> 19

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR primer
sequence

<400> 25

gaaggggTgg gTTTGAAG

19